IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES
(Attorney Docket № 14183US02)

In the Application of:

Ed H. Frank, et al.

Serial No. 10/658,734

Filed: September 9, 2003

For: METHOD AND SYSTEM FOR OPTIMAL LOAD BALANCING IN A HYBRID WIRED/WIRELESS NETWORK

Examiner: Win, Aung T.

Group Art Unit: 2617

Confirmation No. 2791

Electronically filed on October 4, 2010

REPLY BRIEF

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Paper responds to the Examiner's Answer ("Answer") mailed August 2, 2010. The Appellant respectfully requests that the Board of Patent Appeals and Interferences reverse the final rejection of claims 1-22 and 24-46 of the present application for at least the reason set forth in the Appeal Brief and this Reply Brief. This

Reply Brief is timely filed within the period for reply, which ends on Saturday, October 2, 2010, because it is being filed on Monday, October 4, 2010.

REMARKS

As an initial matter, the Appellant notes that the arguments set forth in the Answer are essentially the exact same as those set forth in the Final Office Action. (Compare Answer at pages 3-8 with Final OA at pages 2-6.) Accordingly, the Appeal Brief fully addresses these arguments. (*See* Appeal Brief at pages 13-33.)

A. Claims 1, 9, 17, 27 and 37

All of the claim rejections are based on the proposed combination of Crosbie and Sharma. However, in proposing to combine these references, the Examiner fails to provide "articulated reasoning with some rationale underpinning to support the legal conclusion of obviousness" in the detailed manner described in KSR.

Specifically, the Examiner is required to provide "some articulated reasoning with some rationale underpinning to support the legal conclusion of obviousness." *See KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007) quoting *In re Kahn*, 441 F.2d 997,988 (CA Fed. 2006). Put another way, the Examiner should "identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." *KSR*, 127 S. Ct. at 1741. The Examiner should make "explicit" this rationale of "the apparent reason to combine the known elements in the fashion claimed," including a detailed explanation of "the effects

of demands known to the design community or present in the marketplace" and "the background knowledge possessed by a person having ordinary skill in the art." Id.

The Examiner attempts to support the combination of Sharma and Crosbie as follows:

> Therefore, it would have been obvious to one of ordinary skilled in the art at the time of the invention of made to modify the Crosbie's optimal load balancing method as taught by Sharma et al. to modify the load balancing method according to claim. One of ordinary skill at the time of invention of made would have been motivated to do this for efficient communication.

(Answer, p. 5.) This unsupported, conclusory allegation does not provide "articulated reasoning with some rationale underpinning to support the legal conclusion of obviousness" in the detailed manner described in KSR. Instead, the Examiner appears to be proposing the combination based solely on improper hindsight. The Examiner merely alleges that the combination would result in "efficient communication" without providing any explanation of how or even what efficiencies would result from the combination.

In any event, even if the references are combined, the resulting combination still fails to teach all of the elements of the independent claims.

In the Response to Arguments section of the Answer, the Examiner addresses the following points with regard to claims 1, 9, 17, 27 and 37:

> 1. Appellant argues that Crosbie's method and system modified in view of Sharma et al. does not disclose according to claimed invention as recited in Claims 1, 9, 17, 27 and 37 for the following reasons.

> (a) Crosbie does not disclose polling message [Appeal Brief: 18-23].
>
> (b) Sharma does not teach a switch (MSC 102) querying the connected access points for load information. Instead base station controller (not the MSC 102) queries the connected access points for load information [Appeal Brief: 23-25].
>
> (c) Crosbie does not suggest access device selects and reestablishes communications with access point based on said communicated information of said determined optimal load balancing because it is the switch (i.e., roaming server 22) and not the access device as recited in the claim (i.e., mobile device 26) which makes the decision to select and establish with the access point. Instead the switch (i.e., roaming server 22) directs the mobile device to establish with the access point [Appeal Brief: 26-30].

(Answer, pp. 8-9.)

With regard to point (a), the Examiner states the following:

> 1.1 As regards to argument (a), Appellant argues that Crosbie does not disclose polling message according to claimed limitation
>
> > "receiving one or more polling message from an access device by one or more of a plurality of access points in a hybrid wired/wireless local area network; responsive to said one or more polling message, communicating a load on said one or more of said plurality of access points to a switch, wherein said switch determines optimal load balancing for said one or more of said plurality of access points based on said communicated load"
>
> because service request message as disclosed by Crosbie does not cause access point to communicate the access point load information to roaming server 22, (the claimed switch) (i.e., responsive to said polling message, communicating a load on said access point to a switch) [Appeal Brief: 18-20].

> Examiner respectfully disagrees. Crosbie discloses that service request message from access device (mobile device) cause access point to communicate to the roaming server 22 (herein after, claimed switch) [Crosbie: paragraph 0044] [also see 007, 0035, 0042-0047 & 0055]. Although service request message does not cause access point to communicate the access point load to the switch, the switch determines the access point load in response to service request message [Crosbie: paragraph 0044] [also see 007, 0035, 0042-0047 & 0055].
>
> Sharma teaches that service request message (i.e., call initiation) from access device (mobile device) causes network control device such as base station controller queries base station for load information [Column 4, Line 65-Column 5, Line 60]. Therefore, it would have been obvious to one of ordinary skilled in the art at the time invention was made would realize that modifying the switch so that received service request message causes the switch to communicate access point for the access point load as taught by Sharma's load determining method i.e., querying base station load in response to received service request message would teach claimed polling message according to claimed invention i.e.,
>
> > "receiving one or more polling message from an access device by one or more of a plurality of access points in a hybrid wired/wireless local area network; responsive to said one or more polling message, communicating a load on said one or more of said plurality of access points to a switch, wherein said switch determines optimal load balancing for said one or more of said plurality of access points based on said communicated load".
>
> Therefore, appellant arguments are not persuasive.

(Answer, pp. 9-11, original emphasis omitted.) The Appellant disagrees with the Examiner's analysis.

Specifically, the proposed combination of Crosbie and Sharma fails to disclose or suggest at least "communicating a load on said one or more of said plurality of access points to a switch" in response to "receiving one or more polling message from an access device by one or more of a plurality of access points," as required by claim 1. Instead, Crosbie disclose that in response to receiving the service request (the alleged "polling message") from the mobile device 26 (the alleged "access device"), the access point 24 simply passes the same request (along with the mobile device address) to the alleged "switch" (roaming server 22). (*See, e.g.,* Crosbie ¶¶ 0044-0047.) Crosbie further discloses that the service level of the mobile device 26 (the alleged "access device") and the loading level of the access point 24 have been (previously) stored inside a database 42 within the roaming server 22 (the alleged "switch"). (*Id.*, ¶ 0044.) Upon receiving the forwarded service request (the alleged "polling message") from the AP 24, the roaming server 22 (the alleged "switch") looks up the service level of the mobile device 26 (the alleged "access device") and the loading level of the access point 24 have been (previously) stored inside its database 42, and the roaming server 22 (the alleged "switch") directs the mobile device 26 to connect to the AP 24 with the least congestion. Hence, Crosbie fails to disclose or suggest at least "**communicating a load** on said one or more of said plurality of access points **to a switch**" **in response to "receiving** one or more **polling message** from an access device by one or more of a plurality of access points," as required by Appellant's claim 1.

Sharma fails to overcome this deficiency of Crosbie. In particular, Sharma also fails to disclose or suggest "communicating a load on said one or more of said plurality of access points to a switch" in response to "receiving one or more polling message from an access device by one or more of a plurality of access points." Rather, as explicitly admitted by the Examiner, Sharma merely discloses "that [a] service request message (i.e., call initiation) from access device (mobile device) causes network control device such as base station controller queries base station [transmitters] for load information [Column 4, Line 65-Column 5, Line 60]." (Answer, p. 10.) In other words, as the Examiner admits, the load information is transmitted to the base station controller **in response to a query issued by the base station controller** (BSC) 104 to the base station transmitter (BST) 108. Hence, Sharma fails to disclose or suggest "communicating a load on said one or more of said plurality of access points to a switch" in response to "receiving one or more polling message from an access device by one or more of a plurality of access points."

Next, the Examiner argues as follows with regard to point (b):

> As regards to Appellant argument (b), it should be noted that Crosbie's load balancing method and system is modified by modifying access point load determining feature of the switch (i.e., to communicate access point to determine access point load in response to received service request message) as taught Sharma's base station load determining feature of base station controller (i.e., communicating base station to determine base station load in response to received service request message). It should be noted that Crosbie's switch is not modified by replacing with BSC or MSC of Sharma's system.

> Also in response to Appellant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Therefore, Appellant's arguments are not persuasive.

(Answer, p.11.) The Appellant disagrees with the Examiner's analysis. The Examiner again fails to provide any articulated reasoning for combining Sharma and Crosbie. The Appellant believes the Examiner failed to meet his burden because there simply is no motivation to make the proposed combination. In particular, Crosbie and Sharma both disclose systems that work for their intended purposes. Hence, what motivation would there be to modify Crosbie in the manner suggested by the Examiner? There simply is none. Instead, the Examiner appears to be proposing the combination based solely on improper hindsight.

In any event, even if the references are combined, the resulting combination fails to disclose or suggest "communicating a load on said one or more of said plurality of access points to a switch" in response to "receiving one or more polling message from an access device by one or more of a plurality of access points." Instead, in Crosbie the load information is stored in the roaming server (the alleged switch) before the request for service is issued/received. Upon receiving the service request (the alleged "polling message") from the AP 24, the roaming server 22 (the alleged "switch") looks up the service level of the mobile device 26 (the alleged "access device") and the loading level of the access point 24, which have been (previously) stored inside its database 42. Sharma, on the other hand, teaches transmitting load information to the base station

controller **in response to a query issued by the base station controller** (BSC) 104 to the base station transmitter (BST) 108.

The Examiner argues as follows with regard to point (c):

> 1.3 In response to Appellant's argument (c) that the references fail to show certain features of Appellant's invention, it is noted that the features upon which Appellant relies [i.e., Crosbie does not suggest access device selects and reestablishes communications with access point based on said communicated information of said determined optimal load balancing because it is the switch (i.e., roaming server 22) and not the access device as recited in the claim (i.e., mobile device 26) which makes the decision to select and establish with the access point. Instead the switch (i.e., roaming server 22) directs the mobile device to establish with the access point] are not positively recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).
>
> It would have been obvious to one of ordinary skilled in the art at the time invention was made would realize that Crosbie's method modified in view of Sharma et al. would teach
>
> > "communicating information of said determined optimal load balancing for said one or more of said plurality of access points to access device, wherein said access device selects and re-establishes communication with one or more of said plurality of access points based on said communicated information of said determined optimal load balancing" according to claimed invention i.e.,
>
> communicating information of said determined optimal load balancing for said one or more of said plurality of access points to access device [read on communicating less congested access point information to mobile device for determined optimal load balancing for access point: (0044 & 0045 of Crosbie) in view of Sharma et al. querying load

> information method], wherein said access device selects and re-establishes communication with one or more of said plurality of access points based on said communicated information of said determined optimal load balancing [mobile selects and re-establishes communication with the less congested access point based on communicated less congested access point information: (also see 007, 0035, 0042- 0047 & 0055) of Crosbie) in view of Sharma et al. querying load information method] as stated in Final rejection. Therefore, appellant arguments are not persuasive.

(Answer, pp. 11-12, original emphasis omitted.) The Appellant disagrees with the Examiner's analysis. Crosbie clearly discloses that it is the roaming server 22 (the alleged "switch"), not the mobile device 26 (the alleged "access device"), which makes the decision to direct (the alleged "selection") the transfer of the mobile device 26 to leave from a congested AP 24-1 and to join a less congested AP 24-2 (the alleged "re-establishes communication with AP"). In this regard, Crosbie states as follows:

> [0044] . . . **[T]he roaming server 22 then directs that the mobile device 26 connect to the appropriate access point 24 (this may not be the access point 24 that received the request)**. For example, the mobile device 26 requests service from access point 24-1, but, after determining the user's service level, the roaming server 22 signals access point 24-2 to page the mobile device 26 and establish a connection 30-2. . . .
>
> [0045] When the mobile device 26 moves to a new connection 38 and starts to send packets, the roaming server 22 looks up the mobile device 26 in the device database 42, and according to the user service level data 47 and WLAN loading, **the roaming server 22 might decide that the mobile device 26 should be communicating via another connection 38 that is covering that mobile device 26. . . . The roaming server 22 may direct the mobile device 26 to a different access point 24. In either case the mobile device 26 is forced to transfer its**

> **connection 30.** For example, a user moves a mobile device 26 within range of both access points 24-1, 24-2. The mobile device 26 seeks to make a connection 30-1 to congested access point 24-1. **The roaming server 22 thus directs the mobile device 26 to join a less congested access point 24-2**, with the result shown by connection 30-2. Subsequently, the mobile device 26 moves to the less congested access point 24-2 in a seamless handoff, according to the techniques of the invention as described herein, without requiring re-registration with the roaming server 22 . . .
>
> [0047] . . . **Then the roaming server 22 directs the mobile device 26 to transfer back from the secondary access point 24-2 to the primary access point 24-1**."
>
> [0055] **In step 204, a communications interface 44 of the roaming server 22 detects a triggering event that initiates a transfer of the mobile device 26-2 from the initial access point 24-4 to the target access point 24-5**. This transfer is indicated by a communications link transfer 56 in FIG. 3. The triggering event, for example, can occur when the mobile device 26-2 is moved by the user from one location to another so that the mobile device 26-2 is moving out of range of the initial access point 24-4 and into range of the target access point 24-5. The triggering event can also be indicated by congestion or the need for load balancing for the initial access point 24-4. For example, point to point link 57-1 may become congested in comparison to point to point link 57-2. **Thus, the roaming server 22 initiates the transfer of the mobile device 26-2 from the initial access point 24-4 to the target access point 24-5. . . .**"

(Crosbie, ¶¶ 0044-0047, 0055 (emphasis added).)

Likewise, Sharma discloses that **the base station controller** BSC 104 (which is not a recited element in Appellant's claim), not the mobile device (the alleged "access device"), performs load balancing, assigns carrier frequency traffic channels to the BTS

(the alleged "AP"), and **executes both hard and soft handoff** (the alleged "re-establishing communication").

Accordingly, for at least the reasons set forth above and in the Appeal Brief, the Appellant submits that independent claims 1, 9, 17, 27 and 37 are patentable over the proposed combination of Crosbie and Sharma.

B. Claims 2, 10 and 18

The Answer states the following with regard to claims 2, 10 and 18:

> As regards to claims 2, 10 and 18, Appellant argues that Crosbie does not disclose the alleged "polling message", let a lone "interpreting said one or more polling message by said one or more said plurality of access points, which is located in an operating range of said access device".
>
> Examiner respectfully disagrees. As stated above, Crosbie method and system modified in view of Sharma et al. teaches "polling message" as claimed. It would have been obvious to one of ordinary skilled in the art that access point or access points of modified system and method which is only in operating range of mobile station would receive and interpret polling message and process according to claims 2, 10 and 18 because wireless system are operated in pre-defined operating range. Therefore, appellant arguments are not persuasive.

(Answer, p. 13.) The Appellant disagrees with the above analysis. As an initial matter, Appellant notes that the Examiner has again failed to articulate any motivation for combining the references in the manner suggested. Moreover, as explained above, even if the references are combined, they fail to disclose or suggest the limitations of independent claims 1, 9 and 17. Claims 2, 10 and 18 depend from claims 1, 9 and 17,

respectively. Accordingly, claims 2, 10 and 19 are patentable for at least the reasons given above with regard to claims 1, 9 and 17.

C. Claims 3-4, 11-12, 19-20, 28-30 and 38-40

The Answer states the following with regard to claims 3-4, 11-12, 19-20, 28-30 and 38-40:

> As regards to claims 3-4, 11-12, 19-20, 28-30 and 38-40, Appellant argues that Crosbie and Sharma does not disclose or suggest "selecting access point for optimal load balancing based on RSSI signal strength of access points" as recited in claim 3 or "least load" as recited in claim 4 [Appeal Brief: page 32 & 32].
>
> Examiner respectfully disagrees. Crosbie teaches that mobile selects the access points with best quality of service (Crosbie: 0044-0047) i.e., selecting access point having a least load and based on a received signal strength of access points. Therefore, it would have been obvious to one of ordinary skilled in the art that modified method and system teaches the method according to claims 3-4, 11-12, 19-20, 28-30 and 38-40. Therefore, appellant arguments are not persuasive.

(Answer, pp. 13-14.) The Appellant disagrees with the above analysis. The Examiner has again failed to articulate any motivation for combining the references in the manner suggested. Moreover, as explained above, even if the references are combined, they fail to disclose or suggest the limitations of independent claims 1, 9 and 17. Claims 3-4, 11-12, 19-20, 28-30 and 38-40 each ultimately depend from one of claims 1, 9, 17, 27 and 37. Accordingly, claims 3-4, 11-12, 19-20, 28-30 and 38-40 are patentable for at least the reasons given above with regard to claims 1, 9, 17, 27 and 37.

D. Claim 26

The Answer states the following with regard to claim 26:

> As regards to claim 26, Appellant argues that there is no factual citations to support the claims 26 [Appeal Brief: page 32]. Examiner disagrees.
>
> According to Claim 26, controller of access point is one or more of: a bandwidth management controller, a quality of service controller, a load balancing controller, a session controller and a network management controller because controller communicates a load on access point to a switch as recited in claim 17.
>
> Support for the claim 26 is disclosed as stated above in Examiner's response to Appellant arguments with respect to Parent claims 1 & 17 and claims 1 & 17 rejections as stated in Final office action. As stated above and as stated in office action rejection, modified method and system teaches controller that communicates a load on said access point to a switch [see response to arguments with respect to claims 1 & 17 as stated above] [claim 1 and 17 rejection] i.e., controller of access point communicates a load on access point to a switch. Therefore, controller of access point is one or more of: a bandwidth management controller, a quality of service controller, a load balancing controller, a session controller and a network management controller as claimed in claim 16. Therefore, appellant arguments are not persuasive.

(Answer, pp. 14-15.) The Examiner bases his arguments regarding claim 26 on the arguments he put forth in connection with claims 1 and 17. The Examiner's arguments are fully addressed above in Section A, which is incorporated herein by reference.

E. Claims 31 and 41

The Answer states the following with regard to claims 31 and 41:

> As regards to claims 31 and 41, Appellant argues that there is no factual citations to support the claims 31 and 41 [Appeal Brief: page 32]. Examiner disagrees.
>
> Support for the claims 31 and 41 is disclosed as stated above in Examiner's response to Appellant arguments with respect to Parent claims 1 & 27 & 37 and claims 1 & 27 & 37 rejections as stated in Final office action. Crosbie's hybrid wired/wireless local area network system and method is based on 802.11 standard [see claim 1 rejection, Figure 1, 0034, 0037, 0043 & 0044] wherein mobile station broadcasts beacons based on 802.11 standard [0043]. Therefore, it would have been obvious to one of ordinary skilled in the art that mobile stations in modified method and system teaches broadcasts one or more polling message as claimed because modified method and system is based on 802.11 standard.

(Answer, p. 15.) Again, the Examiner bases his arguments regarding claims 31 and 41 on the arguments he put forth in connection with claims 1, 27 and 37. The Examiner's arguments are fully addressed above in Section A, which is incorporated herein by reference.

CONCLUSION

For at least the reasons set forth above and in the Appeal Brief, the Appellant submits that claims 1-22 and 24-46 are patentable. Reversal of the Examiner's rejection and issuance of a patent on the application are therefore requested.

The Commissioner is hereby authorized to charge any additional fees or credit any overpayment to the deposit account of McAndrews, Held & Malloy, Ltd., Account No. 13-0017.

Respectfully submitted,

Date: October 4, 2010

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